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**None**

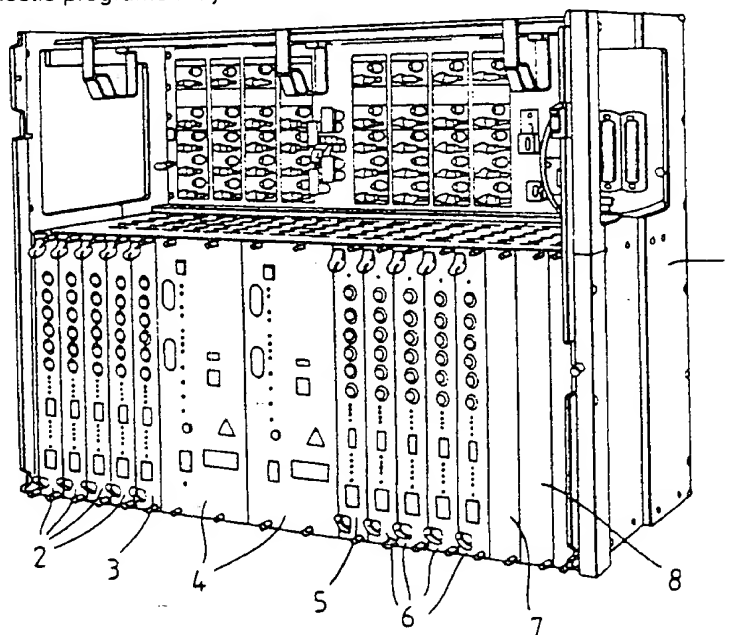
(58) Field of search

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(54) **Fault information system**

(57) A fault indication system for electronic data transmission equipment which is stored in the form of racks. Equipment of this nature commonly consists of printed circuits upon which electronic components are mounted to form a card that may be inserted into the shelf such that it mates with connectors fitted at the rear of the shelf. Current fault indication systems usually consist of one or more fault information cards with indicator lamps or alpha-numeric display devices mounted on a viewing panel visible from the front of the shelf. With increasing complexity there are disadvantages in this system and the invention proposes a fault location system including a data recording medium containing configuration data instructions associated with at least one shelf of equipment and a separate data processing device which can co-operate with the recording medium to enable an operator to read and or configure the operational state of the equipment associated with the recording medium. Diagnostic programs may also be stored.



*Fig. 1.*

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FAULT INFORMATION SYSTEM

The present invention concerns the way in which electronic data transmission equipment is stored and is particularly concerned with the location of faults on stored equipment.

Electronic equipment of the type used in communication, switching and data network systems is usually, but not exclusively, housed in frameworks called cabinets, racks or shelves (hereinafter called shelves or shelf). Equipment of this nature commonly consists of printed circuits upon which electronic components are mounted to form a 'card' or unit that may be inserted into the shelf such that it mates with electrical connector, plugs or sockets fitted at the rear of the shelf. These connectors are electrically interconnected such that insertion of a set of cards forms a network or system.

The complexity of such systems necessitates fault indication systems to be included and these, by existing practice, form an integral part of the system. Fault indication systems usually consist of one or more fault information cards with indicator lamps or alpha-numeric display devices mounted on a viewing panel visible from the front of the shelf.

can be connected and via which the equipment can be configured by the operator for test purposes.

In order that the invention may be more readily understood, an embodiment thereof will now be described by way of example and with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of data communication equipment of the type with which the present invention is concerned.

Referring now to Figure 1 this shows a multipurpose multiplex/optical fibre terminal for use in a Time Division Multiplex (TDM) digital data communication system.

The terminal shown in Figure 1 comprises a main frame 1 capable of carrying a number of slide-in-cards. Thus the frame carries four 2 to 8 Mbit/s multiplexers 2, an 8 to 34 Mbit/s multiplexer 3, 34 Mbit/s optical terminals 4, another 8 to 34 Mbit/s multiplexer 5, four further 2 to 8 Mbit/s multiplexers 6, customer definable interface card 7, and an information card 8.

The information card is used, as already mentioned, to give guidance to an engineer as maintenance operative should there be a failure.

In accordance with the present invention it is proposed that this information card can be either reinforced or replaced by fault detection apparatus in the form of a magnetic semiconductor or optical data recording medium such as a smart card or a computer disc or C.D. ROM. The medium would carry a program tailored to the particular shelf of data communication equipment with which it is associated and which co-operates with a separate data processing device such as a microcomputer.

It is also necessary that a communication link between the rack equipment and the data processing device is provided either by an umbilical cord or by infra-red link or other suitable means by which the two items can be connected. This provides an efficient means for an engineer to configure the rack equipment or to read system status for test purposes via the keyboard of the data processing device.

The fault detection apparatus operates as follows:- Each disk or memory device contains the configuration data for its associated equipment. When an alarm is detected the disk or memory

CLAIMS

1. A fault location system for use with shelf-based digital communication equipment, the fault location system comprising a data recording medium containing data instructions associated with at least one shelf of equipment and a separate data processing device which can co-operate with the recording medium to enable an operator to read and/or configure the operational state of the equipment associated with the recording medium.
2. A fault location system as claimed in Claim 1 wherein the data recording medium stores at least one program including diagnostic facilities.
3. A fault location system as claimed in either Claim 1 or Claim 2 wherein the recording medium is a computer disc and the data processor device a microcomputer.
4. A system as claimed in any one of the preceding claims wherein the shelf-based digital communication equipment has either an umbilical cord or infra red or other communication link to which the data processing device can be connected and via which the operational state of the equipment can be read and/or configured by the operator.